

## Implementing A Quality Management Process

### bioMérieux realizes increased quality and regulatory compliance

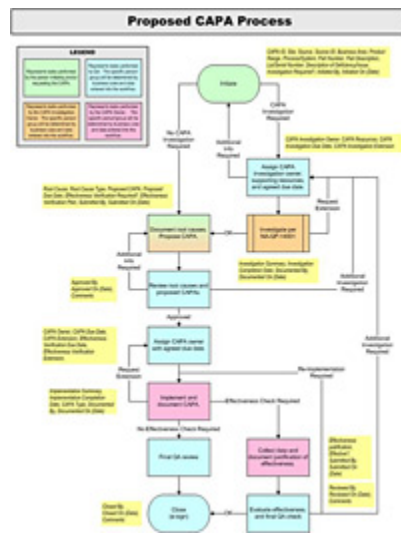
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For companies operating in the life sciences industry, a quality management process is critical, not only for regulatory compliance, but also for continuous improvement initiatives. And for a large, global company, the challenges are even greater, especially as the organization adds new locations and employees. The need to adopt new business practices that are capable of meeting the demands of a larger organization must be reconciled with regulatory requirements that mandate adherence to pre-established procedures and the generation of documentation to prove this adherence.

This is certainly the case for bioMérieux, a world leader in the field of in vitro diagnostic solutions (reagents, instruments and software) which determine the source of disease and contamination to improve patient health and ensure consumer safety. With 35 subsidiaries and a large network of distributors in more than 150 countries and 5,600 employees, bioMérieux's markets include medical and industrial applications.

As with all life sciences companies, bioMérieux must provide a steady stream of compliant documentation for regular U.S. Food and Drug Administration (FDA) audits, to ensure that only the most up-to-date information goes out and consumers are safe. Strict regulations such as FDA 21 CFR Part 11, dictate how, when and under what circumstances electronic documents can be authored, updated, approved, published and archived.



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In particular, bioMérieux needed to find a way to print manufacturing directions from its AS400 ERP system – so outdated that it contained a Fortran program that printed out manufacturing directions using postscript. The company had specific requirements for its manufacturing directions, which are stored in a document control system based on Livelink ECM from Open Text Corporation. These requirements included printing the lot number of each work order on the manufacturing directions, being able to reprint as necessary, verifying information such as batch size, and printing error reports.

As well, the information systems department wanted a scalable solution that could be configured to add documentation as the company requested.

“Manufacturing directions are critical to the production of finished goods,” says Ted Walsh, IS Global Business Area Manager for QA, RA, Manufacturing, and Supply Chain at bioMérieux. “They contain the specifications, or ‘recipe,’ for processing the final product.” The older postscript printing system was very difficult to work with and if the printer jammed, that meant holding up production which was a serious consequence. But, Walsh and his project team resolved this issue.

“We created a program on the AS400 which is basically a socket program that uses the IBM WebSphere software platform to send a URL to Livelink ECM which then launches a query to find the manufacturing directions that are loaded in the Livelink ECM repository. The query uses the category and attributes of the manufacturing directions first to find the product number and then matches the size of the batch to be sure it is accurate, because a reagent or product can have multiple batch sizes. The program basically prints out the requested manufacturing directions with the lot number and everything else that is needed in order to create the manufacturing directions,” adds Walsh.

“If, for some reason, the printer jams or the document smudges, we also have a very simple HTML entry screen where the users can input the information and print a second set of directions without any issues or production stoppages. Being able to use those attributes allows us to do the quick queries.” This entire process is initiated from a job that the Planners use in the ERP environment, so it is very simple for the end user.

Currently, the company is looking at ways to incorporate data from documents into their Laboratory Information Management System (LIMS). Integrating Livelink ECM and LIMS is an important step to continuous improvement and eliminates manual data entry. In addition, technologies incorporating XML have proven to be promising.

Walsh first installed the Open Text software in 1998 while working at Organon Teknika before the company was purchased by bioMérieux. The newly merged organization selected Open Text’s Livelink ECM as the corporate platform for its electronic document management system and Walsh has continued to upgrade the software over the past several years as the technologies have evolved.

The software has been extended to bioMérieux’s international headquarters in France and at several other international sites including Italy, The Netherlands and most of Latin America. All Standard Operating Procedures (SOPs) and departmental procedures within bioMérieux North America have been moved into Livelink ECM – Regulated Documents. The resulting consistency provides the kind of compliance with FDA and the International Organization for Standardization (ISO) standards that

the company sought. Today, the company is focusing on a much wider global consistency.

In all, the bioMérieux sites in North America house some 500,000 documents in Livelink ECM, including SOPs, specific corporate, site and departmental procedures, document control procedures for different product lines, product manuals, package inserts and manufacturing safety data sheets, design history files – all in different locations.

### **Integrating Key Processes**

In order to ensure quality regulatory compliance in their products and services, bioMérieux needed a flexible and expandable solution to control product quality and manage quality issues and initiatives, and a quality management system (QMS) that complied with the provisions of the FDA's 21 CFR Part 820 which provides the FDA requirements for CAPAs, NCMR and related quality management issues.

Walsh and his project team have built a common information infrastructure for an all encompassing business system with compliance components that work with the underlying architecture of that application. The system enables bioMérieux to address 21 CFR Part 11 and Part 820 at the same time and provides continuous improvements for the business.

In fact, over the past 18 months, Walsh has managed several projects that have proven to be very successful for the company, including workflow processes for CAPAs and NCMRs for Quality Control (QC).

### **Compliance through CAPA**

The CAPA process has been rolled out at all the bioMérieux sites in the United States and is also deployed in Italy and two manufacturing sites in France. "We harmonized the CAPA process into one global application which we completed in three months. It's proven to be very effective. We can now generate statistical analysis and random number checking. For example, I know the number of CAPAs completed, those still in process, and those that are not on schedule to be completed. We also have the ability to reference resolutions and codes for types of CAPAs to better understand actions or remedies that need improvement. We have a historical backup now and we also have the ability to search and build reports from Livelink ECM's LiveReports because we've used categories and attributes," says Walsh.

Whenever a problem is detected and a CAPA is launched to address this issue, an electronic form is filled out, which then goes through QC to assign an investigation and provide an effectiveness check. A workflow is used to create an electronic file with an automated sequential CAPA number and digital signatures. The workflow assists in routing the CAPA to the correct individuals at particular sites to take care of the investigation or the effectiveness check. Some steps in the workflow are used as check points to be sure that the CAPA is on the right track and being handled effectively.

Initially, the CAPA process was challenging because of how the file structuring worked. When it was paper-based, one user may have a folder in location A, while somebody else may have part of an investigation in location B, and putting the investigation report together could be quite difficult in short notice during audits.

"However, now, with a centralized repository and electronic signatures, we can go to the system and easily print the information. The reason this is efficient is that when an investigation like a CAPA is in progress, all written documentation can be pulled from the workflow and presented. And once we close the CAPA, Livelink's item handler creates a folder in the CAPA workspace and stores it off as an electronic, full word search file with attributes to assist with reporting. It's now all electronic and assembled for future reference."

## **Encouraging User Adoption**

For the CAPA process, Walsh found the best way to get support for the new approach was to put together strong teams that represent the key areas of the business and get them involved in the evaluation of the new process and decision making. "Then we went off to the different sites and did a unit test. We didn't say, 'You're going to have to do this.' We said, 'Can you provide us with some feedback? If we brought this system in, could you work with it?'"

Most employees are used to an ERP system that is transaction based and weren't familiar with the new workflow interface, or working in assignments with email workflow notifications. With the new system, they need to write the report, attach it to a workflow, and let it carry on to the next step. "You certainly need an individual within each group to be prepared to be an administrator to assist if there is some confusion," says Walsh.

Once Walsh finished visiting the different manufacturing sites to introduce the CAPA system, and tested and received buy-in to the new approach, training began. "We rolled it out site by site to ensure the process was workable. It was a phased approach – first Durham because this is where the expertise started, and then St. Louis and Lombard. We then took it to Italy and France and used the European IS team to implement. Some adjustments needed to be made to the form's static information, such as translating it into French, but this was not a difficult task and it created a greater level of acceptance.

"Basically we learned from site to site what we needed to change or add and what people understood or didn't understand. The methodology of being able to rule things out once you start rolling it out really doesn't take that long. If you have enough business resources, that's half the battle. Now, we can get a site up and running after training in just a couple of weeks. We just turn it on and say this is how we're doing it now."

Key benefits with the CAPA process include being able to keep information together and the ability to search through information very easily. Also, when starting a new CAPA, staff can now search back to see if this situation had come up in the past and how it was handled.

The reporting capabilities have also provided productivity improvements for the company. "The reports let us know how many CAPAs are in process; how many have been closed on time; which product numbers are involved, etc. We can also track issues within specific departments. Previously, we couldn't see this type of information," says Walsh.

Walsh can now review CAPAs by site and the reports provide charts by source for all product lines, by root cause, and product range. The reports also indicate which

users are assigned to the CAPAs and if they are late. "These are areas that can help us to really manage the CAPAs themselves."

Since the project began one year ago, bioMérieux has been much more efficient in meeting deadlines for their CAPAs. This again shows support for continuous optimization.

### **Enhancing the Quality Management System**

Livelink ECM will be the backbone for bioMérieux's TrackWise® Quality Management System. The integration of Livelink ECM and TrackWise will give the company a flexible integrated solution to manage quality issues and related documentation in the design, development, and manufacturing processes. It will tie together all documentation and other content associated with specific quality issues -- CAPA, change control, audits -- being managed and tracked.

"With all the documentation under a controlled environment, we can open up processes for audits, for its validation, for example, and we have the ability to use Livelink as the repository to retrieve that information from those reports, which will have iterations with categories, so it makes it easier to search through the system," says Walsh.

Within the next two to three years, Walsh would like to create portlets to build a QMS type of environment. "By creating the portlets, we'll have the ability to feed the users the information very easily, depending on what system they need to use, rather than having to go to each system to pull the information."

### **Support for the NCMR Process**

Similar to CAPA, Walsh is also using Livelink ECM for its NCMR process – a process that goes through QC – to standardize practices. "When QC ships product, or when raw materials come in, they need to take a sampling. If they discover a problem with the material, they have to write a report or investigate to see why the material didn't conform to specifications."

Once specifications fall outside the upper or lower control limits a workflow is launched to start the NCMR investigation. 'Is there anything we can do to rework the product so we can use it?' 'Do we scrap it?' 'Is it OK to use it?' 'Do we need to quarantine it?' 'What do we do with it?' 'Why did it happen?' 'When did it happen?' 'How did it happen?' 'Is it a supplier issue?' 'Is it a processing issue?' If systemic, it will then be turned into a CAPA.

In the U.S. Durham site, this system is completely paperless and all NCMR records are generated electronically.

In another initiative, bioMérieux uses Open Text's Livelink ECM and Web Content Management (WCM) software to pull documents to their Web framework, so that certificates of conformance, package inserts, manuals, labels, and MSDS Sheets are automatically loaded into the Web's repository for the Technical Library. These documents are controlled documents within Livelink ECM and use specific attributes. These attributes allow a nightly job to run, pulling all controlled documentation that is new or has changed and is targeted for the Technical Library. "Having a single point of control within Livelink ECM is a big advantage because the data is cleaner

and more consistent, and you know that you are getting up to date quality information," says Walsh.

### **Lessons Learned – Best Practices**

Walsh says when you're looking at workflows, it's very important to conduct unit tests and get buy-in. "Even if upper management is on board, you still need to get support from the ground level. You can do that by creating the unit tests and getting the right people involved in the validation and in writing some of the test cases and procedures, because then they understand the system. That's what I find to be best when putting these types of systems in place because it really is a cultural change within the organization. It is the 80-20 rule. You will find 80 percent who just go about the process and 20 percent who will really understand it and help the other 80 percent along. That 20 percent is important when you change the culture because they make it easier for the business to adjust."

*About the Author: Therese Harris, Program Manager for Life Sciences at Open Text, is responsible for vertical market applications, key industry partnerships, and marketing specific to Life Sciences. She has over 15 years experience in the enterprise software industry with special focuses on collaboration, communication and compliance solutions. Therese has spent the past six years in the Enterprise Content Management market and has written and lectured on the application of ECM in vertical markets such as Life Sciences, Financial Services, and Government.*